Commercial Demonstration of the Manufactured Aggregate Processing Technology Utilizing Spray Dryer Ash

Participant
Universal Aggregates, LLC (a joint venture between CONSOL Energy, Inc. and SynAggs, Inc.)

Additional Team Members
CONSOL Energy, Inc.—development and engineering

P.J. Dick, Inc.—project management and construction

SynAggs, LLC—marketing

Location
King George County, VA (Birchwood Power Facility)

Technology
Aggregate manufacturing plant using by-products from spray dryer flue gas desulfurization (FGD) scrubbers

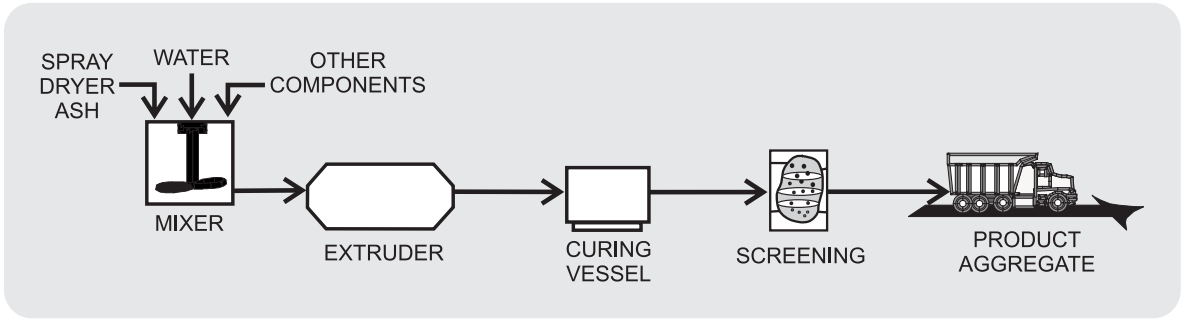
Plant Capacity/Production
150,000 tons/year of lightweight aggregate

Coal
Bituminous, 0.9% sulfur

Project Funding

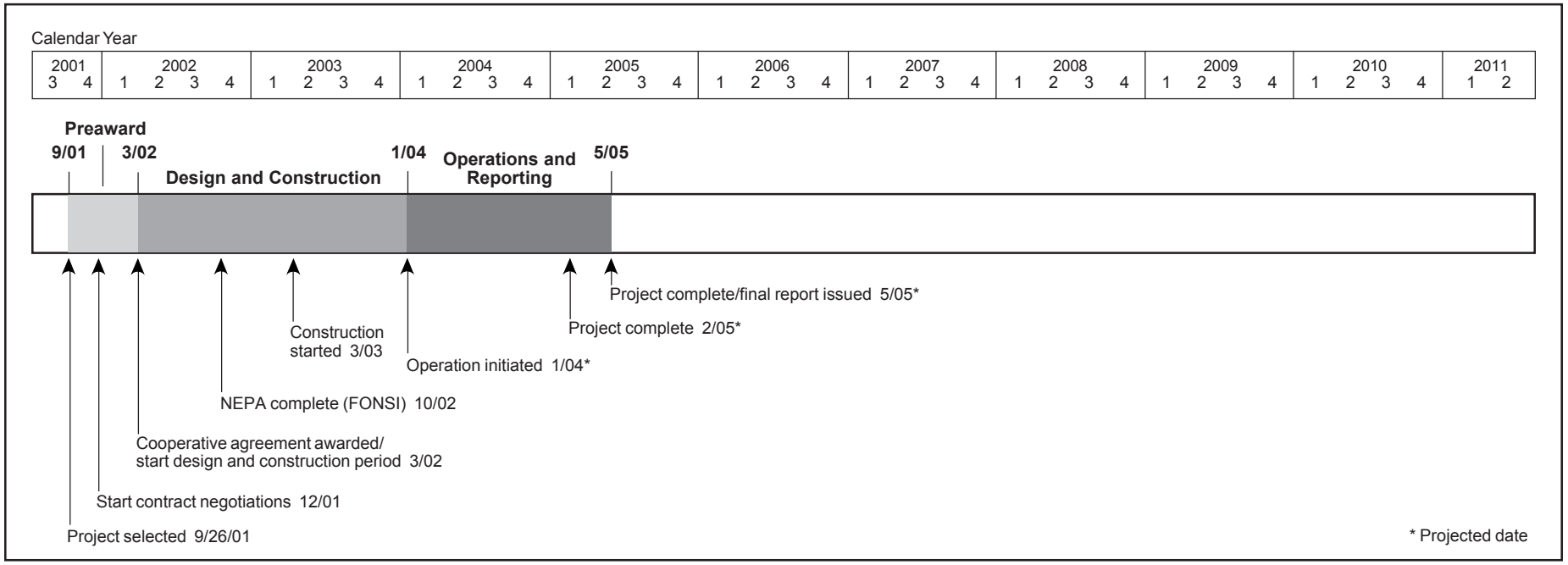
Total	$19,581,734	100%
DOE	7,224,000	37
Participant	12,357,734	63

Project Objective
Universal Aggregates LLC will design, build, and operate an aggregate manufacturing plant that converts 115,000 tons/year of spray dryer by-products into 167,000 tons/year of lightweight aggregate that can be used in the manufacture of masonry blocks or lightweight concrete.



Technology/Project Description
Flue gas desulfurization systems, used to lower sulfur emissions from coal plants, often produce a type of sludge that is landfilled; only 18% of FGD residue is recycled. Much of that 18% pertains to recycling by-products from wet FGD systems or scrubbers. Universal Aggregates' process can be used to recycle the by-products from wet or dry scrubbers. This would reduce plant disposal costs while reducing the environmental drawbacks of landfilling.

The Birchwood facility will transform 115,000 tons/year of spray dryer by-products that are currently being disposed of in an off-site landfill into 167,000 tons/year of a useful product: lightweight aggregates that can be used to manufacture lightweight masonry blocks or lightweight concrete.



Project Status/Accomplishments

The project was selected for award on September 26, 2001. The cooperative agreement was awarded on November 25, 2002. The National Environmental Policy Act process was completed on October 2, 2002, with the issuance of a Finding of No Significant Impact. Start of construction was approved by DOE on March 24, 2003. The plant will begin operation in 2004.

Commercial Applications

There are currently twenty-one spray dryer facilities operating in the United States that produce an adequate amount of spray dryer by-product to economically justify the installation of a lightweight aggregate manufacturing facility. Industry sources believe that as additional scrubbing is required, dry FGD technologies will be the technology of choice. Letters from potential lightweight aggregate customers indicate that there is a market for the product once the commercialization barriers are eliminated by this demonstration project.